

## AMENDMENTS TO THE CLAIMS

Please replace the pending claims with the following claim listing:

1-4. **(Cancelled)**

5. **(Currently Amended)** A substrate system for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system comprising:

an  $\text{Al}_2\text{O}_3$  layer provided on the sapphire substrate; and

a second layer including N, O and Al provided on the  $\text{Al}_2\text{O}_3$  layer,

wherein the second layer contacts with the  $\text{Al}_2\text{O}_3$  layer at a first surface of the second layer and is formed such that a proportion of N to a composition ratio of N, O and Al in the first surface is smaller than that of N to the composition ratio of N, O and Al in a second surface of the second layer contacting with on which a nitride semiconductor layer is vertically grown and ~~that~~ a proportion of O to the composition ratio in the first surface is larger than that of O to the composition ratio in the second surface.

6. **(Currently Amended)** ~~[[The]] A substrate according to claim 5, wherein system~~  
for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system  
comprising:

an  $\text{Al}_2\text{O}_3$  layer provided on the sapphire substrate;

a second layer including N, O and Al provided on the  $\text{Al}_2\text{O}_3$  layer; and

a cap layer made of  $\text{Al}_2\text{O}_3$  is provided as the uppermost layer of the substrate for growth of nitride semiconductor provided on the second layer, the nitride semiconductor being vertically grown on the cap layer,

wherein the second layer contacts with the  $\text{Al}_2\text{O}_3$  layer at a first surface of the second layer and is formed such that a proportion of N to a composition ratio of N, O and Al in the first surface is smaller than that of N to the composition ratio of N, O and Al in a second surface of the second layer contacting with the cap layer and a proportion of O to the composition ratio in the first surface is larger than that of O to the composition ratio in the second surface.

7. **(Currently Amended)** A substrate system for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system comprising:

an  $\text{Al}_2\text{O}_3$  layer provided on the sapphire substrate; [[and]]

a second layer comprising either one layer of an AlON layer or an AlN layer, the second layer being provided on said  $\text{Al}_2\text{O}_3$  layer; layer; and  
a vertically grown nitride semiconductor layer provided on or above the second layer.

8. **(Currently Amended)** The substrate system according to claim 7, wherein further comprising a cap layer made of  $\text{Al}_2\text{O}_3$  is provided as the uppermost layer of the substrate for growth of nitride semiconductor, the cap layer being positioned between the first layer and the nitride semiconductor layer such that the nitride semiconductor layer is vertically grown directly on the cap layer.

9. **(Currently Amended)** A substrate system for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system comprising:

an  $\text{Al}_2\text{O}_3$  layer provided on the sapphire substrate;

an AlON layer which is a first layer provided on the  $\text{Al}_2\text{O}_3$  layer;

an AlN layer which is a second layer provided on the AlON layer; and

a structure in which the first layer and the second layer are deposited on the  $\text{Al}_2\text{O}_3$  layer in this order.

a vertically grown nitride semiconductor layer provided on or above the AlN layer.

10. **(Currently Amended)** The substrate system according to claim 9, wherein further comprising a cap layer made of  $\text{Al}_2\text{O}_3$  is provided as the uppermost layer of the substrate for growth of nitride semiconductor, the cap layer being positioned between the AlN layer and the nitride semiconductor layer such that the nitride semiconductor layer is vertically grown directly on the cap layer.

11. **(Currently Amended)** A substrate system for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system comprising:

a first layer comprised of  $\text{Al}_2\text{O}_3$ , the first layer being disposed against the sapphire substrate at a first surface; and

a second layer including N, O and Al, the second layer being disposed on the first layer, the second layer being ~~configured to be~~ disposed against a vertically grown nitride semiconductor layer at a second surface,

wherein a proportion of N to a composition ratio of N, O and Al in the first surface is smaller than a proportion of N to the composition ratio of N, O and Al in the second surface and a proportion of O to the composition ratio of N, O and Al in the first surface is larger than a proportion of O to the composition ratio of N, O and Al in the second surface.

12. **(Currently Amended)** ~~[[The]] A substrate system according to claim 11, wherein for vertical growth of a nitride semiconductor layer on a sapphire substrate, the substrate system comprising:~~

a first layer comprised of  $\text{Al}_2\text{O}_3$ , the first layer being disposed against the sapphire substrate at a first surface;

a second layer including N, O and Al, the second layer being disposed on the first layer; and

a cap layer made of  $\text{Al}_2\text{O}_3$  is provided as the uppermost layer of the substrate for growth of nitride semiconductor provided on the second layer, the second layer being disposed against the cap layer at a second surface and the nitride semiconductor being vertically grown on the cap layer,

wherein a proportion of N to a composition ratio of N, O and Al in the first surface is smaller than a proportion of N to the composition ratio of N, O and Al in the second surface and a proportion of O to the composition ratio of N, O and Al in the first surface is larger than a proportion of O to the composition ratio of N, O and Al in the second surface.